



REED SWITCHES

RELIABLE

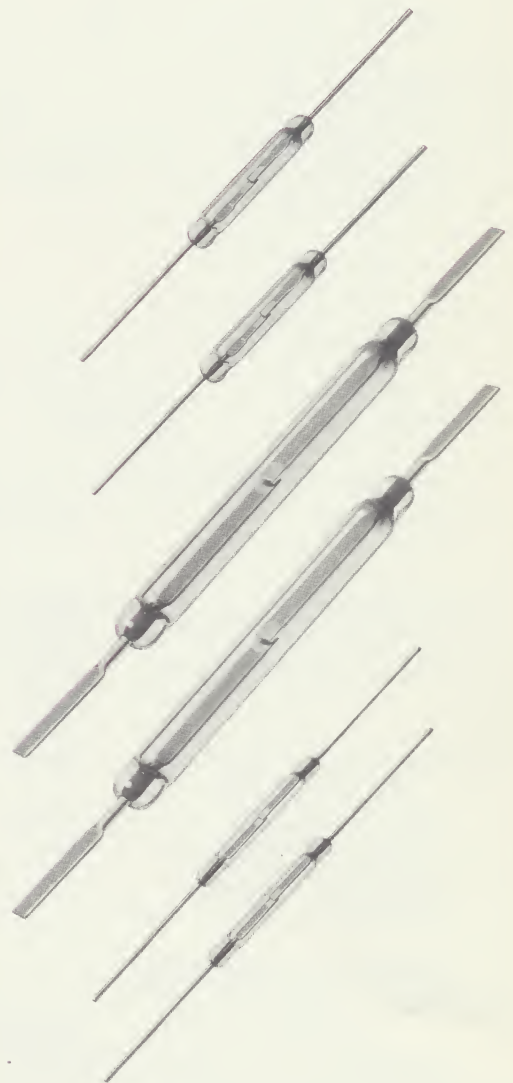
SENSITIVE

FAST

RUGGED

ECONOMICAL

COMPACT



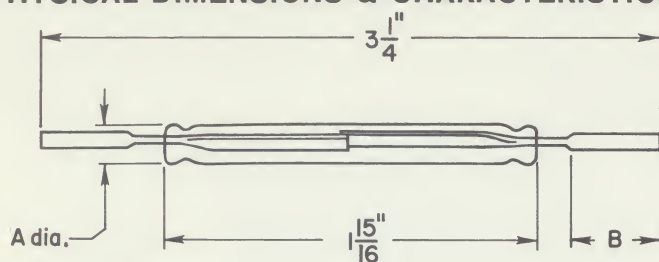
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REED SWITCH SPECIFICATIONS

STANDARD

PHYSICAL DIMENSIONS & CHARACTERISTICS:



Dimensions:

Part Numbers	A	B
69-4311-1 69-4321-1	.200 inch	1/2 inch

Contact Arrangement: Single pole single throw. Normally open (Form A)
Contact Material: Diffused Gold or Rhodium
Atmosphere: Dry Inert Gas
Mounting: Any Position

CONTACT RATINGS:

Part Number:	69-4311-1	69-4321-1
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Contact Material:	Gold	Rhodium
Maximum Voltage: (Volts)	150 DC 250 AC	150 DC 250 AC
Maximum Current: (Amperes)	Switch, 1 amp Carry, 4 amps	Switch, 1.5 amp Carry, 6 amps
Maximum Power: (Watts, DC)	12 watts	25 watts
Resistive or properly suppressed (VA, AC)	15 VA	40 VA
Maximum Resistance, Initial:** (Milliohms)	75 milli-ohms	50 milli-ohms
Maximum Resistance, End of Life:** (Ohms)		2 ohms
Peak Breakdown Voltage: (Volts)		500 volts

OPERATING PARAMETERS:

Pull-In (Specify):***	Available from 40 to 200 ampere turns*
Drop-Out:	Approximately one-half of pull-in
Speed: Operate	2.5 msec (including bounce)
Release	1.0 msec (including bounce)
Closure Rate (Maximum):	400 cycles per second
Insulation Resistance:	5000 megohms
Temperature Range:	-55°C to +150°C
Contact Capacitance:	1.5 micromicrofarads
Vibration:	10G @ 10-55 cycles/sec (open or closed)
Shock:	15G Min.

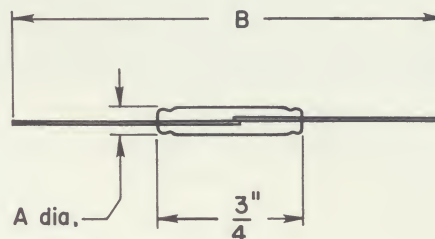
LIFE & RELIABILITY:

At Rated Load (as above):	5 x 10 ⁶ operations
Dry Circuit:	500 x 10 ⁶ operations

* as measured with NPE standard coil #60-4988.

MINIATURE

PHYSICAL DIMENSIONS & CHARACTERISTICS:



Dimensions:

Part Numbers	A	B
69-2111-1 69-2121-1	.100 inch	2 1/4 inches
69-2111-2 69-2121-2	.100 inch	1 1/2 inches
69-2211-1 69-2221-1	.125 inch	2 1/4 inches
69-2211-2 69-2221-2	.125 inch	1 1/2 inches

Contact Arrangement: Single pole single throw. Normally open (Form A)
Contact Material: Diffused Gold or Rhodium
Atmosphere: Dry Inert Gas
Mounting: Any Position

CONTACT RATINGS:

Part Number:	69-2111-1	69-2121-1
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Contact Material:	Gold	Rhodium
Maximum Voltage: (Volts)	50 DC 150 AC	50 DC 150 AC
Maximum Current: (Amperes)	Switch, .250 amp Carry, 1.5 amps	Switch, .375 amp Carry, 2.5 amps
Maximum Power: (Watts, DC)	4 watts	6 watts
Resistive or properly suppressed (VA, AC)	6 VA	10 VA
Maximum Resistance, Initial:** (Milliohms)	150 milli-ohms	100 milli-ohms
Maximum Resistance, End of Life:** (Ohms)		2 ohms
Peak Breakdown Voltage: (Volts)		300 volts

OPERATING PARAMETERS:

Pull-In (Specify):***	Available from 20 to 100 ampere turns*
Drop-Out:	Approximately one-half of pull-in
Speed: Operate	1 msec (including bounce)
Release	.1 msec (including bounce)
Closure Rate (Maximum):	2000 cycles per second
Insulation Resistance:	1000 megohms
Temperature Range:	-55°C to +150°C
Contact Capacitance:	.5 micromicrofarads
Vibration:	10G @ 10-55 cycles/sec (open or closed)
Shock:	15G Min.

LIFE & RELIABILITY:

At Rated Load (as above):	5 x 10 ⁶ operations
Dry Circuit:	500 x 10 ⁶ operations

* as measured with NPE standard coil #60-0007.

** with 150% closing ampere turns applied to energizing coil (see test circuit).

*** Standard pull-in sensitivity tolerances are ± 5 , $\pm 7\frac{1}{2}$, and $\pm 12\frac{1}{2}$ ampere turns from customer selected nominal values.
Switch terminals are solder-dipped.

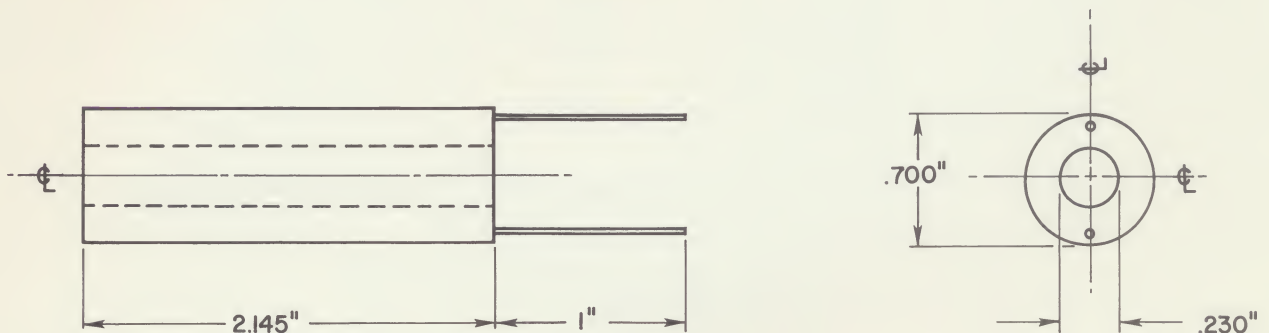
ELECTROMAGNETIC ACTUATION

New Product Engineering can supply a full line of epoxy molded coils for reed switch actuation.

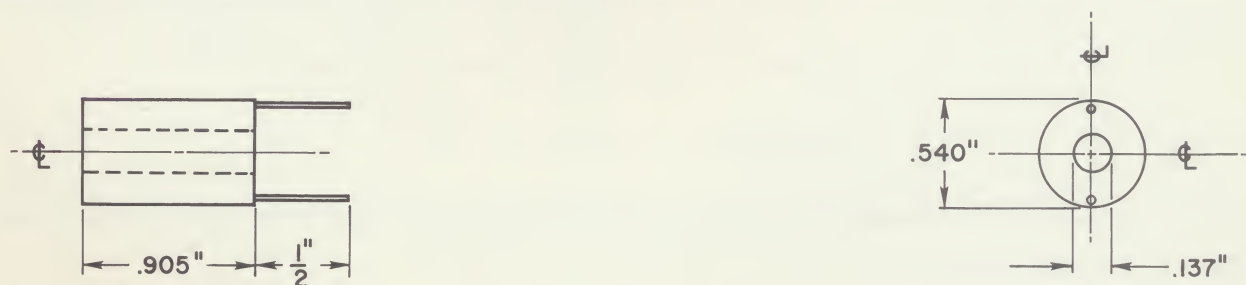
STANDARD COILS

Coil Number	60-4988	60-0007
Turns	10,000	10,000
Resistance (ohms)	650	1650
For Switch		
Series Numbers	69-4311-1	69-2111
	69-4321-1	69-2121
		69-2211
		69-2221

STANDARD COIL # 60-4988



STANDARD COIL # 60-0007



Other turns and resistance combinations are available for specific reed switch applications.

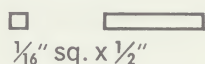
PERMANENT MAGNET ACTUATION

Reed switches may be actuated mechanically by the use of magnets or coils and magnets combined.

STANDARD MAGNETS

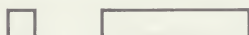
Part Number

24-05001-1001



$\frac{1}{16}$ " sq. x $\frac{1}{2}$ "

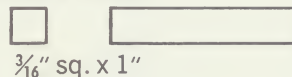
24-05001-1002



$\frac{1}{8}$ " sq. x $\frac{3}{4}$ "

Part Number

24-05001-1005



$\frac{3}{16}$ " sq. x 1"

24-05001-1006

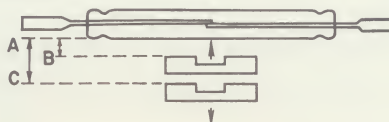


$\frac{1}{4}$ " sq. x 1"

APPLICATIONS

NOTE:

AB = PULL-IN DISTANCE
AC = DROP-OUT DISTANCE



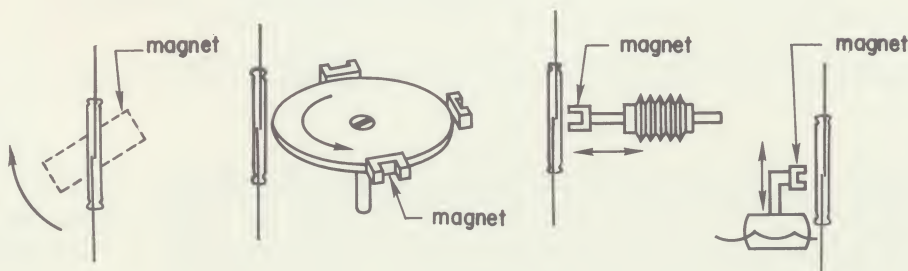
Standard Size Switch Series

SWITCH SENSITIVITY IN AMPERE TURNS	PERMANENT MAGNET PROXIMITY, MAGNET SERIES 24-05001-			
	-1002		-1006	
PULL-IN	PULL-IN	DROP-OUT	PULL-IN	DROP-OUT
60	$\frac{3}{16}$ "	$\frac{3}{8}$ "	$\frac{3}{4}$ "	$1\frac{1}{8}$ "
70	$\frac{1}{8}$ "	$\frac{5}{16}$ "	$\frac{9}{16}$ "	$1\frac{1}{16}$ "
90	$\frac{1}{16}$ "	$\frac{1}{4}$ "	$\frac{1}{2}$ "	$1\frac{5}{16}$ "
110	—	—	$\frac{7}{16}$ "	$\frac{7}{8}$ "

Miniature Size Switch Series

SWITCH SENSITIVITY IN AMPERE TURNS	PERMANENT MAGNET PROXIMITY, MAGNET SERIES 24-05001-			
	-1002		-1006	
PULL-IN	PULL-IN	DROP-OUT	PULL-IN	DROP-OUT
20	$\frac{5}{8}$ "	$\frac{7}{8}$ "	$1\frac{1}{8}$ "	$1\frac{5}{8}$ "
40	$\frac{3}{8}$ "	$\frac{3}{4}$ "	$\frac{7}{8}$ "	$1\frac{3}{8}$ "
60	$\frac{5}{16}$ "	$1\frac{1}{16}$ "	$\frac{5}{8}$ "	$1\frac{1}{4}$ "
80	$\frac{1}{4}$ "	$\frac{5}{8}$ "	$\frac{1}{2}$ "	$1\frac{1}{8}$ "

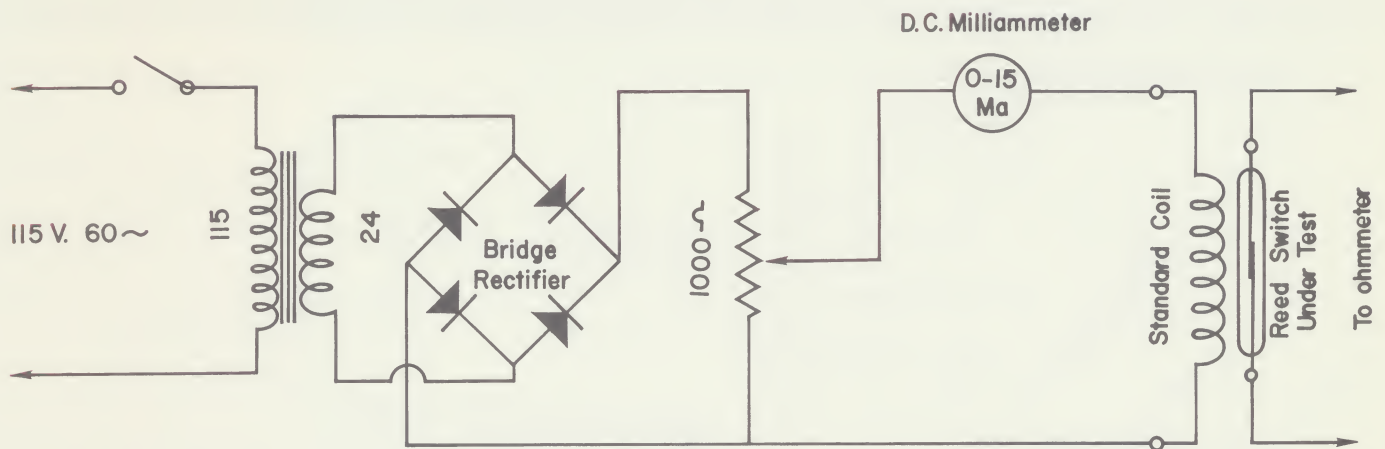
Movable permanent magnets and magnetic-shields may be attached to floats, cams, bellows, doors, hydraulic rams, scales, meters, conveyors, shafts, wheels, turntables and countless other devices, to indicate or react to motion or position.



Engineering assistance is available for specialized applications.

TEST CIRCUITS

PULL-IN AND DROP-OUT SENSITIVITY



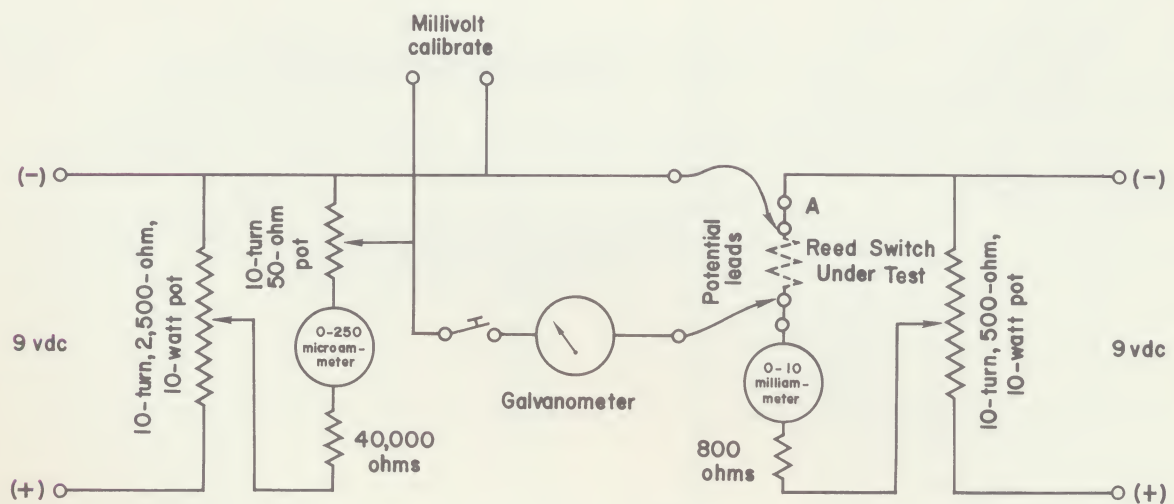
Ampere turns = Milliamperere reading x 10.

NOTES:

The standard coil should be at least four inches from any magnetic materials.

Test clips connected to the switch must be non-magnetic.

CONTACT RESISTANCE



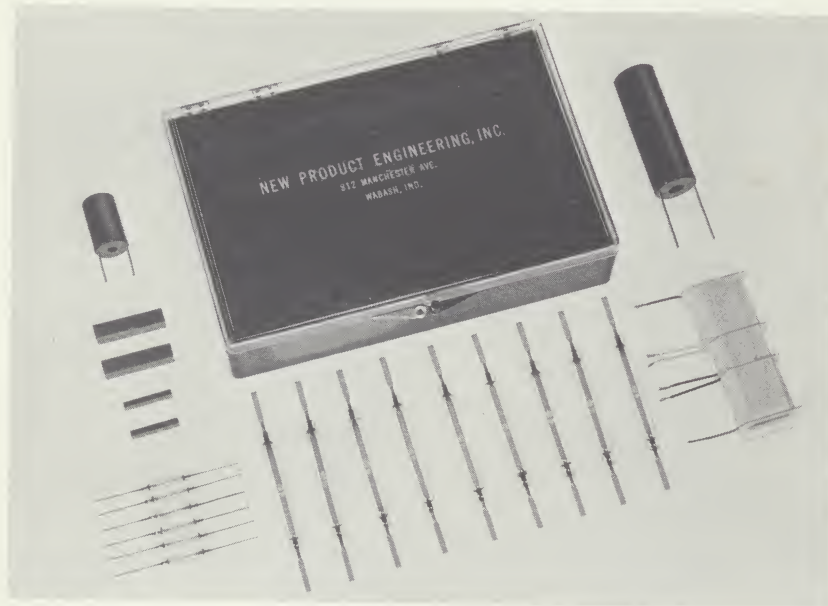
NOTES:

Power supplies must be completely isolated from each other. Common grounding will result in the contact resistance at point "A" being included in the reading.

This circuit tests contact resistance at 10 milliamperes, with an open circuit voltage of 9 volts.

ENGINEERING DESIGN KIT

Part No. 67-001



An assortment of reed switches, magnets and coils is available in kit form for the design engineer to custom design and bread-board prototype circuit applications.

CONTENTS

QUANTITY	ITEM
9	Standard size switches in 3 sensitivity ranges
6	Miniature size switches in 3 sensitivity ranges
1	60-4988 standard test coil
1	60-0007 standard test coil
1	60-002-1 logic coil
2	1/4" sq. x 1" magnets
2	1/8" sq. x 3/4" magnets
1	Set of complete instructions for building the following devices:
	• Up to 3 pole normally open reed relay • Normally open plus normally closed reed relay • Electrical latch relay • Magnetic latch relay • Element of a cross-point memory matrix • "And" circuit • "Inclusive Or" circuit • "Exclusive Or" circuit • Single mode matrix • Various mechanical magnetic-proximity devices

Cost \$10.00 . . . available from stock

Prices and ordering information
available from:

NAYLOR ELECTRIC COMPANY
1718 East Erie Boulevard
Syracuse, New York 13210
Phone (315) 472-9183

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